UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,681	11/09/2001	Curt Schwaderer	5460240/21120	2381

7590	08/12/2005

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EXAMINER
TRAN, PHILIP B

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<table>
<tr><td rowspan="2">Office Action Summary</td><td>Application No.
10/045,681</td><td>Applicant(s)
SCHWADERER, CURT</td></tr>
<tr><td>Examiner
Philip B. Tran</td><td>Art Unit
2155</td></tr>
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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). .
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>12 May 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *16* is/are allowed.

6)☒ Claim(s) *1-3 and 14-15* is/are rejected.

7)☒ Claim(s) *4-13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119 .

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Notice to Applicant

1.   This communication is in response to the amendment filed 12 May 2005. Claims

1-16 are pending for further examination.

Claim Rejections - 35 U.S.C. § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

3.   Claims 1-3 and 14-15 are rejected under 35 U.S.C. § 102(e) as being anticipated

by Choe, U.S. Pat. Application No.US 2002/0118682.

Regarding claim 1, Choe teaches a method of forwarding information packets

operating on a multiple element computer system having primary and secondary

computing elements, said method comprising providing a multiple element computing

system having a primary computing element and a secondary computing element in

operative communication with each other, building a table comprised of a plurality of

entries with addresses associated therewith wherein said entries are organized

hierarchically according to an LC-Trie compression algorithm operating on said

addresses, receiving an information packet within said computer system wherein said

information packet has a destination address associated therewith, searching said table

using an LC-Trie search algorithm to find a match between said address of an entry in

said table and said destination address of said information packet, transmitting said

information packet to a forwarding address associated with said address of said

matching entry, and wherein said steps of said method are performed by a forwarding

table manager application running on said primary and said secondary computing

elements (= constructing routing/forwarding tables for an IP address lookup using LC-

trie algorithm) [see Abstract and Figs. 2-5 & 13-15 and Paragraphs [0019-0023] and

Paragraphs [0090-0092]].

Regarding claim 2, Choe further teaches the invention in accordance with claim 1

wherein said table comprises an LC-Trie search table and a next-hop table associated

together, wherein said LC-Trie search table comprises information from said LC-Trie

compression algorithm, and wherein said next hop table comprises information

necessary to transmit said information packet to said forwarding address associated

with said matching entry [see Figs. 13-15 and Paragraphs [0090-0091]].

Regarding claim 3, Choe further teaches the invention in accordance with claim 2

wherein said LC-Trie search table entries comprise a branching factor, a skip value, and

an LC-Trie/Next-Hop Offset generated for each of said plurality of entries by said LC-

Trie compression algorithm during said building step [see Paragraphs [0005] and [0072-

0073]].

Regarding claims 14-15, Choe further teaches the invention in accordance with claim 1 wherein said computer system comprises a network processor with a core processor and at least one micro-engine, and said primary computing element is said core processor and said secondary computing element is said micro-engine and wherein said step of building said table is performed by said forwarding table manager on said core processor, and said step of searching said table is performed on said micro-engine by said forwarding table manager [see Figs. 2-5 and Paragraphs [0019-0023]].

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5.   Claims 1-3 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Choe, U.S. Pat. Application No.US 2002/0118682 in view of Varghese et al

(Hereafter, Varghese), U.S. Pat. No. 6,011,795.

Regarding claim 1, Choe teaches a method of forwarding information packets

operating on a multiple element computer system having primary and secondary

computing elements, said method comprising providing a multiple element computing

system having a primary computing element and a secondary computing element in

operative communication with each other, building a table comprised of a plurality of

entries with addresses associated therewith wherein said entries are organized

hierarchically according to an LC-Trie compression algorithm operating on said

addresses, receiving an information packet within said computer system wherein said

information packet has a destination address associated therewith, searching said table

using an LC-Trie search algorithm to find a match between said address of an entry in

said table and said destination address of said information packet, transmitting said

information packet to a forwarding address associated with said address of said

matching entry, and wherein said steps of said method are performed by a forwarding

table manager application running on said primary and said secondary computing

elements (= constructing routing/forwarding tables for an IP address lookup using LC-

trie algorithm) [see Abstract and Figs. 2-5 & 13-15 and Paragraphs [0019-0023] and

Paragraphs [0090-0092]].

In addition, Varghese, in the same field of forwarding and routing table lookup

endeavor, discloses trie lookup of addresses [see Varghese, Fig. 14 and Col. 12, Lines

33-67]. It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to incorporate the teaching of Varghese into the teaching of Choe

for building a routing/forwarding table comprised of a pluralities of entries that are

organized hierarchically according to an LC-trie compression algorithm operating on

said addresses.

Regarding claim 2, Choe/Varghese further teaches the invention in accordance

with claim 1 wherein said table comprises an LC-Trie search table and a next-hop table

associated together, wherein said LC-Trie search table comprises information from said

LC-Trie compression algorithm, and wherein said next hop table comprises information

necessary to transmit said information packet to said forwarding address associated

with said matching entry [see Choe, Figs. 13-15 and Paragraphs [0090-0091]] and [see

Varghese, Figs. 13-14 and Col. 15, Lines 9-67].

Regarding claim 3, Choe/Varghese further teaches the invention in accordance

with claim 2 wherein said LC-Trie search table entries comprise a branching factor, a

skip value, and an LC-Trie/Next-Hop Offset generated for each of said plurality of

entries by said LC-Trie compression algorithm during said building step [see Choe,

Paragraphs [0005] and [0072-0073]] and [see Varghese, Col. 15, Lines 9-67].

Regarding claims 14-15, Choe/Varghese further teaches the invention in

accordance with claim 1 wherein said computer system comprises a network processor

with a core processor and at least one micro-engine, and said primary computing

element is said core processor and said secondary computing element is said micro-

engine and wherein said step of building said table is performed by said forwarding

table manager on said core processor, and said step of searching said table is

performed on said micro-engine by said forwarding table manager [see Choe, Figs. 2-5

and Paragraphs [0019-0023]] and [see Varghese, Figs 13-14].

Allowable Subject Matter

6.   Claims 4-13 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

7.   Claim 16 is allowed.

Response to Arguments

8.   Applicant's arguments with respect to claims 1-31 have been considered but are

not persuasive because of the following reasons:

        LC-trie approach is known in the art as disclosed in Choe and Varghese (both

are previously cited) and building of a forwarding/routing table comprised of a pluralities

of entries that are organized hierarchically according to an LC-trie compression

algorithm operating on said addresses is also disclosed in Choe and Varghese. The

examiner makes 102/103 rejections for claims 1-3 and 14-15. In case that applicant still

maintains arguments about the teaching of LC-trie in combination with the

forwarding/routing table in the provisional application of Choe, then the examiner

asserts that combination of Choe and Varghese do teach the LC-trie approach in

combination with the forwarding/routing table as broadly presented in claim 1 and as

argued by the applicant [see above rejection].

Claims 4-13 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims. Claim 16 is allowed.

Other References Cited

9.   The following references cited by the examiner but not relied upon are

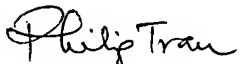considered pertinent to applicant's disclosure.

A) Zisapel et al, U.S. Pat. No. 6,665,702.

B) Ferguson et al, U.S. Pat. No. 6,430,595.

10.   A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS

SET TO EXPIRE THREE MONTHS FROM THE MAILING DATE OF THIS

COMMUNICATION. FAILURE TO RESPOND WITHIN THE PERIOD FOR

RESPONSE WILL CAUSE THE APPLICATION TO BECOME ABANDONED (35 U.S.C.

§ 133). EXTENSIONS OF TIME MAY BE OBTAINED UNDER THE PROVISIONS OF

37 CAR 1.136(A).

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Tran whose telephone number is (571) 272-3991. The Group fax phone number is (571) 273-8300. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar, can be reached on (571) 272-4006.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Philip B. Tran
Art Unit 2155
August 05, 2005